IN THE CLAIMS

A listing of the claims of the present application is as follows:

1. (Presently Amended) A method of processing digital information in accordance with a speech signal, the method comprising the steps of:

generating a spread spectrum signal, wherein the spread spectrum signal is representative of the digital information and further wherein the generating step comprises implementing a predetermined modulation carrier frequency such that the spread spectrum signal is within a frequency bandwidth corresponding to speech; and

embedding the spread spectrum signal in the speech signal.

2. (Original) The method of claim 1, wherein the generating step comprises the step of implementing one or more selected parameters associated with the spread spectrum signal such that the spread spectrum signal is within the frequency bandwidth corresponding to speech.

3. (Original) The method of claim 2, wherein the generating step further comprises the step of low pass filtering the spread spectrum signal to be within the frequency bandwidth corresponding to speech.

4. (Original) The method of claim 2, wherein the generating step further comprises the step of implementing a predetermined bit rate associated with the digital information such that the spread spectrum signal is within the frequency bandwidth corresponding to speech.

5. (Original) The method of claim 2, wherein the generating step further comprises the step of implementing a predetermined pseudonoise sequence length.

6. (Canceled).

7. (Original) The method of claim 1, wherein the embedding step further comprises the steps of:

analyzing the speech signal using linear prediction, the speech signal analysis determining one or more parameters associated with a vocal tract filter; and

shaping the spread spectrum signal using the vocal tract filter.

8. (Original) The method of claim 7, wherein the embedding step further comprises the step of setting a gain associated with the spread spectrum signal.

9. (Original) The method of claim 8, wherein the gain is determined by at least one of a fixed constant, a linear predictor residual energy value associated with the speech signal and a speech energy value associated with the speech signal.

10. (Original) The method of claim 8, wherein the gain is determined by a linear combination of a fixed constant, a linear predictor residual energy value associated with the speech signal and a speech energy value associated with the speech signal.

11. (Original) The method of claim 8, wherein the embedding step further comprises the step of adding the spread spectrum signal to the speech signal.

12. (Original) The method of claim 1, further comprising the step of recovering the digital information embedded in the speech signal.

13. (Original) The method of claim 12, wherein the recovery step comprises the steps of:

analyzing the speech signal with the embedded spread spectrum signal using linear prediction, the speech signal analysis determining one or more parameters associated with an inverse filter; and

filtering the speech signal with the embedded spread spectrum signal using the inverse filter.

14. (Original) The method of claim 13, wherein the recovery step comprises the steps of:

detecting the spread spectrum signal in the speech signal; and

demodulating the spread spectrum signal to obtain the digital information.

15. (Original) The method of claim 14 wherein the recovery step further comprises the step of synchronizing on a pseudonoise sequence used in generating the spread spectrum signal.

16. (Original) The method of claim 15, wherein the synchronizing step is performed in accordance with a phase locked loop.

17. (Original) The method of claim 1, wherein the digital information is a watermark.

18. (Presently Amended) Apparatus for processing digital information in accordance with a speech signal, the apparatus comprising:

at least one processor operative to: (i) generate a spread spectrum signal, wherein the spread spectrum signal is representative of the digital information and further wherein the generating operation comprises implementing a predetermined modulation carrier frequency such that the spread spectrum signal is within a frequency bandwidth corresponding to speech; and (ii) embed the spread spectrum signal in the speech signal.

19. (Original) The apparatus of claim 18, wherein the generating operation comprises implementing one or more selected parameters associated with the spread spectrum signal such that the spread spectrum signal is within the frequency bandwidth corresponding to speech.

20. (Original) The apparatus of claim 19, wherein the generating operation further comprises low pass filtering the spread spectrum signal to be within the frequency bandwidth corresponding to speech.

21. (Original) The apparatus of claim 19, wherein the generating operation further comprises implementing a predetermined bit rate associated with the digital information such that the spread spectrum signal is within the frequency bandwidth corresponding to speech.

22. (Original) The apparatus of claim 19, wherein the generating operation further comprises implementing a predetermined pseudonoise sequence length.

23. (Canceled).

24. (Original) The apparatus of claim 18, wherein the embedding operation further comprises analyzing the speech signal using linear prediction, the speech signal analysis determining one or more parameters associated with a vocal tract filter, and shaping the spread spectrum signal using the vocal tract filter.

25. (Original) The apparatus of claim 24, wherein the embedding operation further comprises setting a gain associated with the spread spectrum signal.

26. (Original) The apparatus of claim 25, wherein the gain is determined by at least one of a fixed constant, a linear predictor residual energy value associated with the speech signal and a speech energy value associated with the speech signal.

27. (Original) The apparatus of claim 25, wherein the gain is determined by a linear

combination of a fixed constant, a linear predictor residual energy value associated with the speech signal and a speech energy value associated with the speech signal.

28. (Original) The apparatus of claim 25, wherein the embedding operation further comprises adding the spread spectrum signal to the speech signal.

29. (Original) The apparatus of claim 18, wherein the at least one processor is further operative to recover the digital information embedded in the speech signal.

30. (Original) The apparatus of claim 29, wherein the recovery operation comprises analyzing the speech signal with the embedded spread spectrum signal using linear prediction, the speech signal analysis determining one or more parameters associated with an inverse filter, and filtering the speech signal with the embedded spread spectrum signal using the inverse filter.

31. (Original) The apparatus of claim 30, wherein the recovery operation comprises detecting the spread spectrum signal in the speech signal, and demodulating the spread spectrum signal to obtain the digital information.

32. (Original) The apparatus of claim 31, wherein the recovery operation further comprises synchronizing on a pseudonoise sequence used in generating the spread spectrum signal.

33. (Original) The apparatus of claim 32, wherein the synchronizing operation is performed in accordance with a phase locked loop.

34. (Original) The apparatus of claim 18, wherein the digital information is a watermark.

35. (Presently Amended) Apparatus for embedding digital information in a speech signal, the apparatus comprising:

at least one processor operative to: (i) generate a spread spectrum signal, wherein the spread spectrum signal is representative of the digital information and further wherein the generating operation comprises implementing a predetermined modulation carrier frequency such that the spread spectrum signal is within a frequency bandwidth corresponding to speech; and (ii) embed the spread spectrum signal in the speech signal.

~~35~~ 36. (Presently Amended) Apparatus for recovering digital information embedded in a speech signal, the apparatus comprising:

at least one processor operative to: (i) obtain a speech signal having a spread spectrum signal embedded therein, wherein the spread spectrum signal is representative of the digital information and generated by implementing a predetermined modulation carrier frequency such that the spread spectrum signal is within a frequency bandwidth corresponding to speech prior to embedding the spread spectrum signal in the speech signal; (ii) analyze the speech signal with the embedded spread spectrum signal using linear prediction, the speech signal analysis determining one or more parameters associated with an inverse filter; (iii) filter the speech signal with the embedded spread spectrum signal using the inverse filter; (iv) detect the spread spectrum signal in the speech signal; and (v) demodulate the spread spectrum signal to obtain the digital information.